

Organization:

Patti Friszolowski, NC Winegrowers Association

**NC STATE
UNIVERSITY**

2020 Pierce's Disease Webinar
July 6, 2020
9:30 – 11:30 am

Presenters:

Sara Villani, Plant Pathologist, NC State University
Hannah Burrack, Entomologist, NC State University
Mark Hoffmann, Viticulture Specialist, NC State University

Co-Host:

Emma Volk, Research Technician, NC State University



Agenda:

Block one (9:30-10:15):

Identification & Symptoms and Testing Procedures – *Dr. Sara Villani, NC State University*
With Q+A

Block two (10:15-11):

Vectors & Insecticides - *Dr. Hannah Burrack, NC State University*
With Q+A

Block three (11-11:30):

Cultivars & Management Practices – *Dr. Mark Hoffmann, NC State University*
With Q+A

Rules:

1.) Q+A:

- Please write your questions into the Chat-box to 'Everyone'.
- Some presenters also address questions directly during the presentation
- *We try to address all questions after a presentation*
- Emma Volk will monitor questions and will make sure that we won't miss any.

2.) Pesticide Credits

- You have to be present through the whole webinar. You won't be able to retain credits if you log-in half way through the webinar.
- Please have your pesticide license number, name and county ready.
- *You will have to enter you name and license number into the chat box by end of the seminar. Alternative name and county.*
- *If you don't do that, you won't be able to get the necessary hours.*
- Emma Volk will record all information

Webinar Recording will be available on the Grape Portal:

<https://grapes.ces.ncsu.edu>

Enjoy the webinar 😊

Pierce's Disease: Management and Cultivars



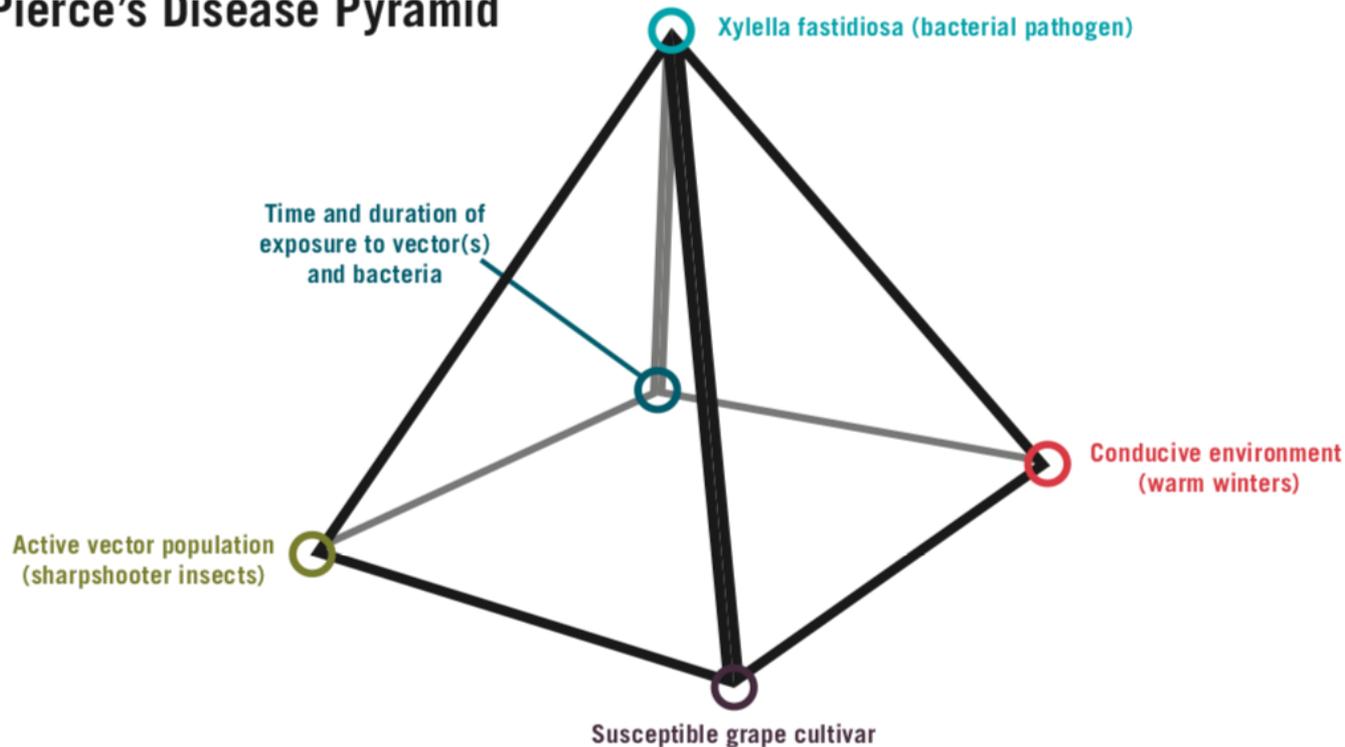
Mark Hoffmann
North Carolina State University
mark.hoffmann@ncsu.edu

Overview

- What are the factors impacting PD?
- Cultivars?
- Management?
- Identification and vine removal

Factors impacting the development of Pierce's Disease

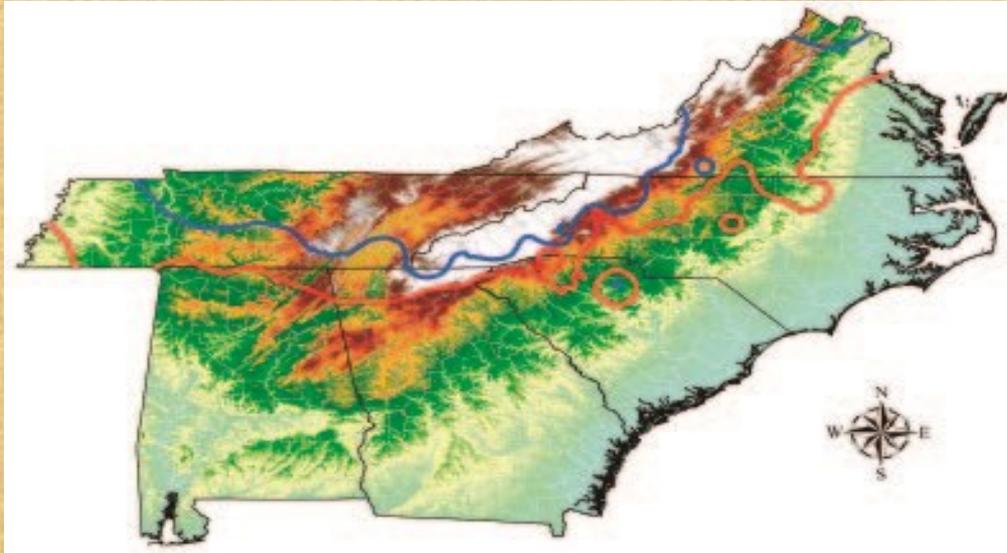
Pierce's Disease Pyramid



Factors impacting the development of Pierce's Disease

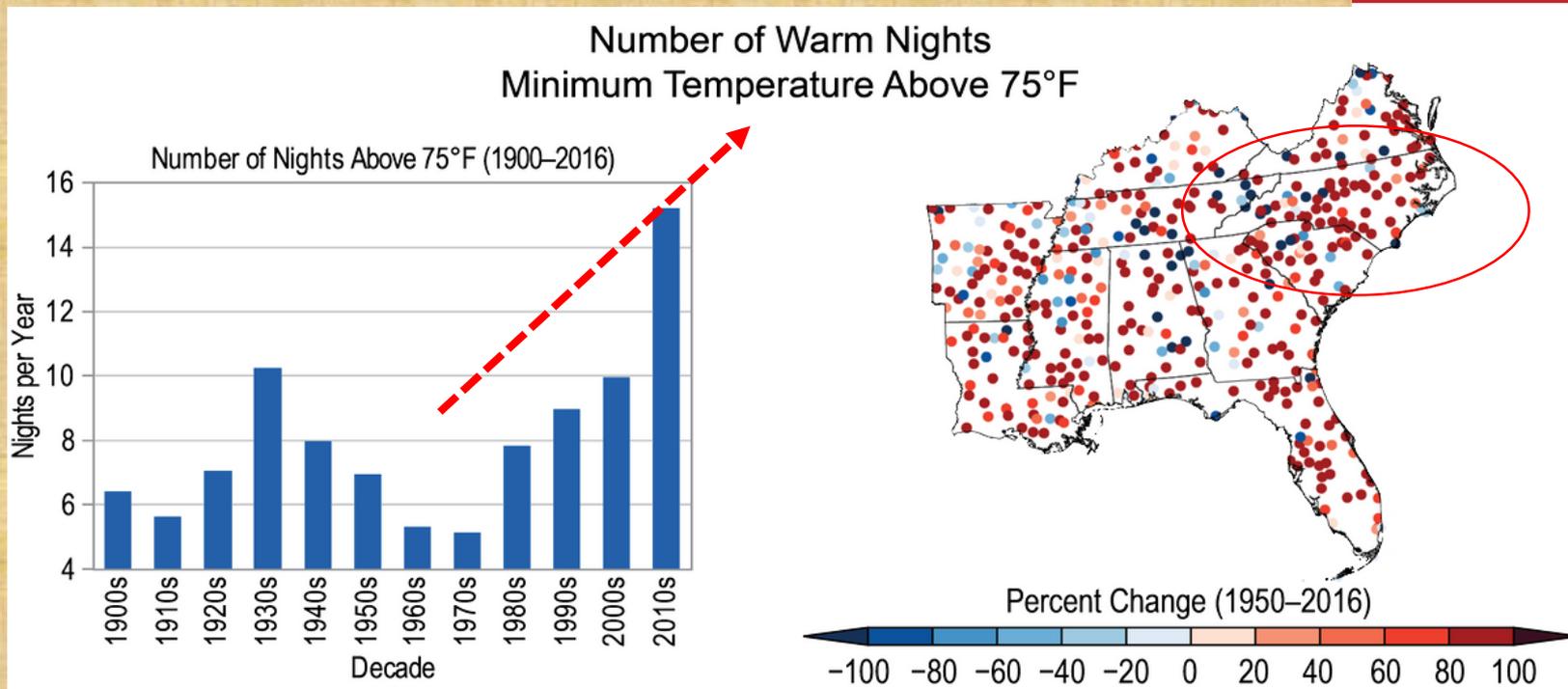
- **Factor 1:** The bacterium has to be present
- **Factor 2:** There must be an active insect vector population
- **Factor 3:** The grape cultivar must be susceptible
- **Factor 4:** Grapes must be exposed to vector(s) and bacteria
- **Factor 5:** The environment must be conducive to the survival of the bacterium

Factors impacting the development of Pierce's Disease



- Pierce's Disease is present in most AVAs in North Carolina
- First positive samples were found in a vineyard in Hendersonville in 2019
- Warmer winters lead to higher bacterial survival rates

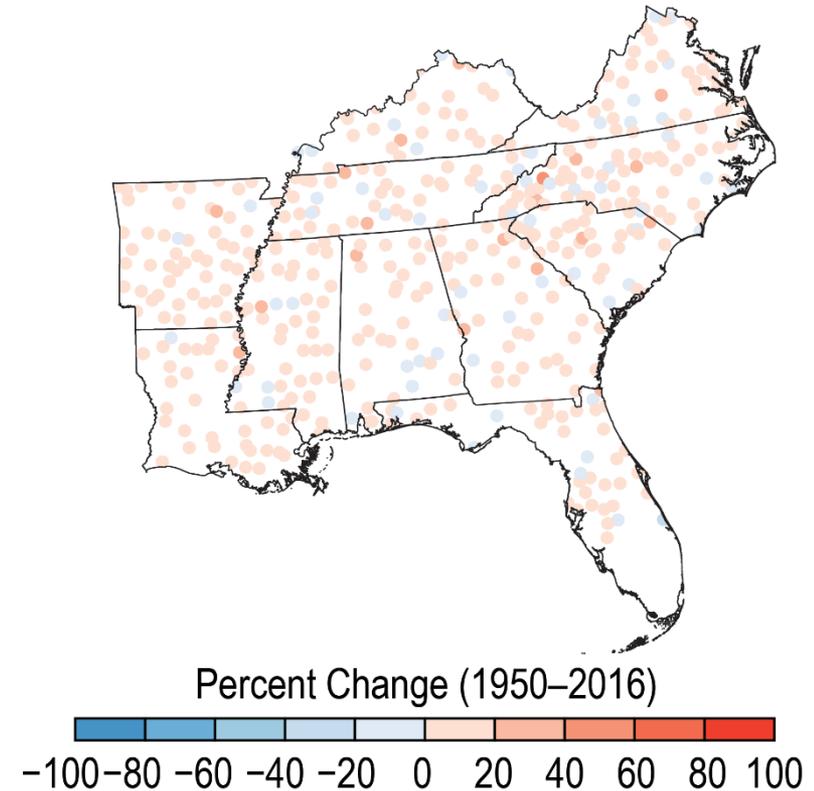
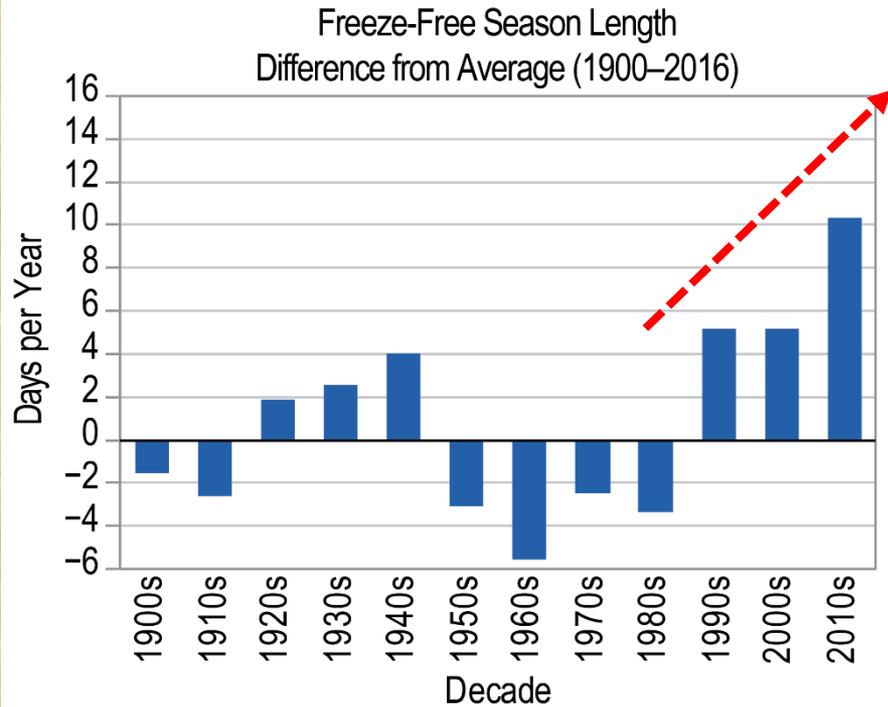
It is getting warmer.



Source: US-GCRP 2018

- More warmer nights in North Carolina in the coming decades are projected

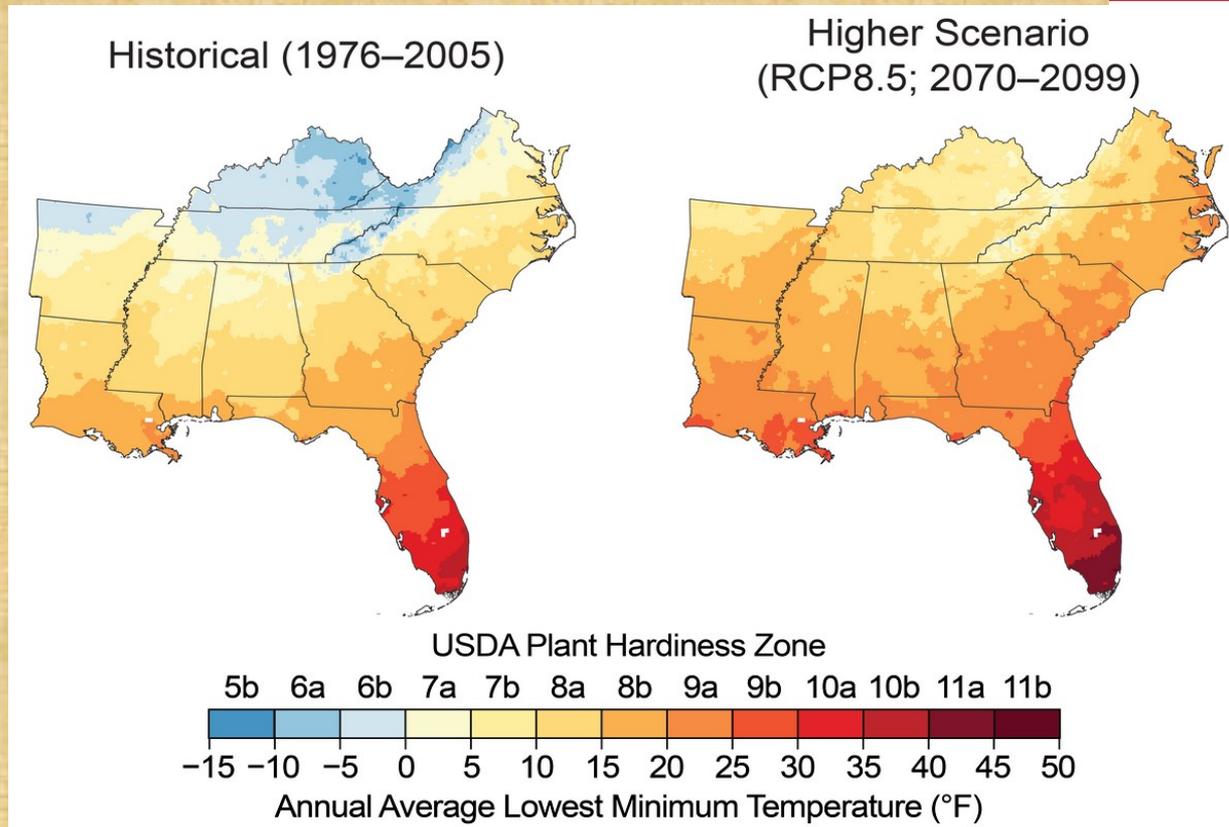
It is getting warmer.



Source: US-GCRP 2018

- More freeze free days in North Carolina are projected
- Freeze is NOT Frost!

It is getting warmer.



Source: US-GCRP 2018

- Shift of plant hardy-zones in North Carolina and the rest of the Southeast.
- Most of NC could be shifting to 9a, a zone currently in S-GA and N-FL

Cultivar Choice

Several Challenges for the Future:

- **Pierce's Disease resistant or tolerant;**
- Heat and Disease tolerant;
- Ability to ripe in a climate with less cool nights;

Cultivar Choice is *ALSO* a long-term PD management tool



Cultivar Choice

Usually:

- Common cultivars in NC: Chardonnay, Merlot, Cab franc: Susceptible
- Cab Sauv, Chambourcin, Petit Verdot: less susceptible, but we see PD in NC on those too.
- So what's about the 'tolerant' or 'resistant' cultivars?

Cultivar Choice in NC: VERY complex decisions!
Customer, Wine-Style, Environment, Pierces' Disease

PD Resistant Cultivars



'Lenoir' or '**Black Spanish**': Large producer in South Texas; High Tannins, high acidity; Comes own-rooted; Heritage: *Vitis berlanderi* x *V. vinifera*



'Lomanto': Small commercial acreage in South Texas; Heritage: *Hybrid Salado* x *V. vinifera* 'Malaga'

PD Resistant Cultivars



'Cynthiana' or '**Norton**'. Larger acreage in GA, W-NC and VA. Own-rooted; Heritage: *Vitis aestivalis*



Muscadines ('Noble' (red); 'Carlos', 'Doreen', 'Magnolia')
Heritage: *Vitis rotundifolia*

PD Resistant Cultivars



'Petite Sirah' or 'Durif'. Tight clusters, high tannin. Major producer in CA.



'Victoria Red'. Fresh Market, not Wine making. Collaboration of AK and TX breeding programs. Heritage: *V. vinifera* x Hybrid

PD Resistant Cultivars



‘Camminare noir’. Cultivar released by UC Davis in 2020; Large berries, loose clusters, early bud breaking; 50% Petite Sirah; 25 % Cab. Sauv.



‘Paseante noir’. Cultivar released by UC Davis in 2020; Medium sized berries, filled clusters, mid-season bloom, late ripening. 50% Zinfandel; 25 % Petite Sirah, 12.5 % Cab. Sauv.

PD Resistant Cultivars



‘Errante noir’. Cultivar released by UC Davis in 2020; Highly resistant to Pierce’s Disease. Large berries, loose clusters, very productive. Dark-red purple color, complex fruit aromas, high quality tannins.

*50% Sylvaner; 12.5% Cab. Sauv.,
Caringnane and Chardonnay*

PD Resistant Cultivars



'Blanc du Bois': Large producer in South Texas and Florida. High producer. Loose Clusters
Heritage: *Vitis vinifera x smalliana, simpsoni, labrusca*



'Chardonel': Shows high tolerance! Commercial use in NC and GA; Late Ripening! Substitute for Chardonnay?
Heritage: *Seyval x Chardonnay*

PD Resistant Cultivars



'Ambulo blanc': Cultivar released by UC Davis in 2020; Highly resistant to Pierce's Disease. Early Bloom; Highly productive; Heritage: 62.5% Cab. Sauv., 12.4 % Carignane; 12.5% Chardonnay



'Caminante blanc': Cultivar released by UC Davis in 2020; Highly resistant to Pierce's Disease. Early Bloom; Highly productive; Heritage: 62.5% Cab. Sauv., 12.4 % Carignane; 12.5% Chardonnay

Test of cultivars

- Always try only a few plants in your vineyard first!
- Don't plant large acreage!
- We don't know how cultivars perform in our climate yet.
- We will plant a cultivar trial in 2021 in collaboration with a commercial vineyard in the Yadkin Valley
- **UC Davis Cultivars are limited. Available at Wonderful, but you have to call! (661) 758-4777**

Identification of PD



Identification of PD



Leaf necrosis
with distinct
red/brown
margins

Identification of PD



'Islands' of
green tissue on
lignified shoots

Identification of PD



Leaf blade abscission
'match sticks'

Testing for PD

<https://projects.ncsu.edu/cals/plantpath/extension/clinic/>

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North Carolina State University Plant Disease and Insect Clinic

Home | [Login to Database](#) | [New Users](#)

- About the Clinic
- Services and Fees
- How to Submit a Sample
- Directions to the Clinic
- Turf Diagnostics
- Plant Disease Fact Sheets
- Insect Information Notes
- Webinars and Training
- County Extension Centers and NCDA & CS

Welcome!

The Plant Disease and Insect Clinic diagnoses plant problems for farmers, growers, landscapers, homeowners, and gardeners. In consultation with expert faculty, we recommend ways to treat or prevent the problems we diagnose.

We work in partnership with the North Carolina Cooperative Extension Service, whose county offices can diagnose many common plant disease and insect problems. They can help you to properly collect and submit a sample to the PDIC, if necessary. Follow this link to find a North Carolina **County Extension Agent** or **Extension Master Gardener Volunteer** near you!

News & Alerts

Navigate to "How to Submit a Sample" if you need our help.

News about diseases and insects, information about current plant problems, and news about upcoming events:

WINTER REMINDERS



Happy New Year from the PDIC! Outdoor pests and pathogens are dormant, like this cedar-apple rust gall, but you may still have samples to send. If so, remember to package them well, especially if outdoor temperatures are below freezing. This is particularly important for greenhouse crops which could be damaged by cold in

Alerts, Updates and Information

- Plant Pathology Portal
- Entomology Portal
- Boxwood blight
- Thousand Cankers in Tennessee and Virginia
- Emerald Ash Borer in North Carolina

Click the yellow "see more" link below for archived News and Alerts

QUICK HELP

Disease Problems:
919.515.3619
Insect Related:
919.515.9530
General Questions:
plantclinic@ces.ncsu.edu
8am-5pm

Testing for PD

<https://projects.ncsu.edu/cals/plantpath/extension/clinic/>

Contact local agent and/or specialist!!!!
Submit photos AND physical sample
There is a fee involved

- We have a team working during COVID
- They perform highly sensitive tests
- They will contact all specialists in the state
- AND they will contact specialists out-of-state

Pierce's Disease Management

Pierce's Disease Management

- **Factor 1:** The bacterium has to be present
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- **Factor 4:** Grapes must be exposed to vector(s) and bacteria 
- **Factor 5:** The environment must be conducive to the survival of the bacterium

Pierce's Disease Management

Five Cornerstones of PD Management:

- *Scout!*
 - *Test!*
 - *Prune!*
 - *Vector Control!*
 - *Remove!*
-
- Treat as if it would be infected.
 - **Intensive Scouting and testing!**
 - Mark and remove confirmed vines.
 - Don't wait for another year!

Non-bearing vineyards



Pierce's Disease Management

Five Cornerstones of PD Management:

- *Scout!*
 - *Test!*
 - *Prune!*
 - *Vector Control!*
 - *Remove!*
- **Frequent Scouting and testing!**
 - **Vector control when confirmed cases**
 - Mark confirmed vines.
 - Anecdotal knowledge on pruning
 - Remove vine latest in year 2!

Mature bearing vineyards



Pierce's Disease Management- Scouting and Testing

- Scout for PD symptoms on vines frequently!
- You can scout for insect vectors, but if you do so: **contact Hanna Burrack's team before making decisions to help with identification.**
- Early symptoms can show after bloom
- Severe symptoms show later in season
- But infection with vectors can occur early
- **Send samples to the PDIC for testing to confirm PD**
- **Mark the vines with flagging tape**



Pierce's Disease Management- Scouting and Testing

Scouting and Testing!

Every vineyard manager, no matter how much acreage, should have a systematic approach to scout and test for **Pierce's Disease, Trunk Disease, Viruses and Root Borer**

The scouting system should have three components:

- Field based marking system (flagging tape)
- Hard-copy records (paper)
- Computer based records (e.g. MS Excel)

Pierce's Disease Management- Pruning or Removing?

In young, non-bearing vineyards:

- **Remove and replace, not worth the risk.**



In mature vineyards:

- First year infections: Cut infected shoots out immediately if possible! Although impracticable, CLEAN pruning tools with 10% bleach after each cut.
- Alternative: Prune wood out during dormant season
- **If symptoms come back next year: Remove and replace!**



Pierce's Disease Management- Vector Control

Control Host Plants: Weed Control

Xylella fastidiosa has multiple host plants and multiple vectors!

- Vineyard should be always mowed!
- Keep herbicide strips under the vines.
- *Keep surroundings mowed 50-100 feet, if possible*



Pierce's Disease Management- Vector Control

Control Host Plants: Insect Control

Soil applied systemic insecticides + foliar applications

Common practice: early spring and mid summer applications

See Hannah Burracks' talk and see Southern IPM Production Guide.

Pierce's Disease Management-Resources

Insect and Weed Control

www.smallfruits.org

The screenshot shows the website for the Southern Region small fruit consortium. The navigation bar includes a home icon, SRSFC Activities, Crops, Regional Expert, IPM/Production Guides (circled in red), County Agent Training, and Weather. The main content area is titled "IPM/Production Guides" and lists various guides for different crops. The "Bunch Grapes" section and its link are circled in red.

the Southern Region
small fruit consortium

Home SRSFC Activities Crops Regional Expert **IPM/Production Guides** County Agent Training Weather

IPM/Production Guides

Last updated Friday 5 January 2018 8:9 GMT

Blueberries

- [Southeast Regional Blueberry Integrated Management Guide](#)
- [Southeast Regional Blueberry Horticultural and Growth Regulator Guide](#)
- [Southeast Regional Organic Blueberry Pest Management Guide](#)

Bunch Grapes

- [Southeast Regional Bunch Grape Integrated Management Guide](#)

Caneberries

- [Southeast Regional Caneberries Integrated Management Guide](#)
- [Southeast Regional Caneberry Production Guide \(PDF\)](#)
- [Southeast Regional Caneberry Production Guide \(Online Version\)](#)

Muscadines

- [Southeast Regional Muscadine Grape Integrated Management Guide](#)

Strawberries

- [Southeast Regional Strawberry Integrated Pest Management Guide](#)
- [Southeast Regional Strawberry Plasticulture Production Guide](#)
- [Fungicide Selection for Botrytis and Anthracnose Fruit Rot Management 2017](#)

Pierce's Disease Management-Resources

www.smallfruits.org

2018 Southeast Regional Bunch Grape Integrated Management Guide

Commodity Editor

Phil Brannen (University of Georgia)

Section Editors

Pathology; Phil Brannen (University of Georgia), Mizuho Nita (Virginia Tech)

Entomology; Hannah Burrack (North Carolina State University),

Doug Pfeiffer (Virginia Tech), Brett Blaauw (University of Georgia)

Weed Science; Wayne Mitchem (North Carolina State University)

Vertebrate Management and Grape Culture; David Lockwood (University of Tennessee); Michael T. Mengak (University of Georgia)

Pesticide Stewardship and Safety; Ash Sial (University of Georgia)

Senior Editors

Phil Brannen (University of Georgia)

Bill Cline (North Carolina State University)

Contributions were also made by Frank Hale (University of Tennessee), Bill Cline (North Carolina State University), and Eric T. Stafne (Mississippi State University).

A product of the Southern Region Small Fruit Consortium (www.smallfruits.org). Recommendations are based on information from the manufacturer's label and performance data from research and extension field tests. Because environmental conditions and grower application methods vary widely, suggested use does not imply that performance of the pesticide will always conform to the safety and pest control standards indicated by experimental data. This publication is intended for use only as a guide. Specific rates and applications methods are on the pesticide label, and these are subject to change at any time. Always refer to and read the pesticide label before making any application! The pesticide label supersedes any information contained in this guide, and it is the legal document referenced for application standards.

Pierce's Disease Management-Resources

<http://grapes.ces.ncsu.edu> (Grape Portal)

Muscadine and Vinifera Grapes

Search

- Meet Our Staff
- Events
- NEW: Grape and Wine Forum
- Resources
 - Muscadines Bunch Grapes
- Grape Diary
- Production
- Pest Management
- Marketing
- Freeze Damage
- Cultivars
 - Cultivar Characteristics Sources of

Events

DEC 16 MON	Annual Georgia End-of-the-Year Viticulture Mon 12/16 9 AM - 4 PM 7 hours away	TODAY	DEC 17 TUE	Annual North Carolina End-of-the-Year Viticulture Roundup Tue 12/17 9:30 AM - 5 PM Tomorrow	JAN 17 2020	Annual Muscadine Growers Conference Fri Jan 17 - Sat Jan 18, 2020 1 month away
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Pierce's Disease Management- Resources

Other resources:

<https://secure.caes.uga.edu/extension/publications/files/pdf/B%2015141.PDF>

<http://ipm.ucanr.edu/PMG/r302101211.html>

Thank you for your attention
Q+A